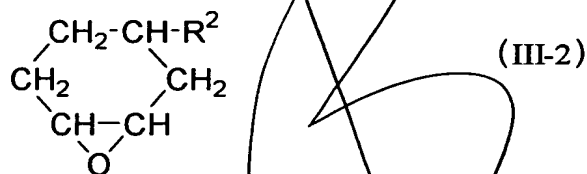


What is claimed is:

1. A polyether copolymer having a weight-average molecular weight of 10^5 to 10^7 , comprising:

- 5 (A) 3 to 30 % by mol of repeating unit derived from propylene oxide;
 (B) 96 to 69 % by mol of repeating unit derived from ethylene oxide; and
 (C) 0.01 to 15 % by mol of repeating unit derived from a monomer represented by formula (III-1) and/or formula (III-2):

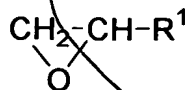


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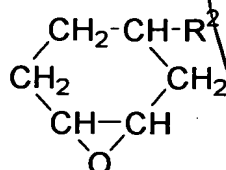
wherein R^1 and R^2 are groups each having a reactive functional group.

2. A crosslinked material comprising a polyether copolymer, the polyether copolymer having a weight-average molecular weight of 10^5 to 10^7 and comprising:

- 15 (A) 3 to 30 % by mol of repeating unit derived from propylene oxide;
 (B) 96 to 69 % by mol of repeating unit derived from ethylene oxide; and
 (C) 0.01 to 15 % by mol of repeating unit derived from a monomer represented by formula (III-1) and/or formula (III-2):



(III-1)



(III-2)

wherein R^1 and R^2 are groups each having a reactive functional group, and

5 the crosslinked material being produced by utilizing reactivity of crosslinkable components of the polyether copolymer.

3. The crosslinked material according to claim 2, wherein the reactive functional group in the repeating unit (C) is (a) an ethylenically unsaturated group, (b) a reactive
10 silicon group, (c) an epoxy group or (d) a halogen atom.

4. The crosslinked material according to claim 3, wherein the monomer having the ethylenically unsaturated group which constitutes the repeating unit (C) is selected from the group consisting of allyl glycidyl ether, 4-vinylcyclohexyl glycidyl ether, α -
15 terphenyl glycidyl ether, cyclohexenyl methyl glycidyl ether, p-vinylbenzyl glycidyl ether, allyl phenyl glycidyl ether, vinyl glycidyl ether, 3,4-epoxy-1-butene, 3,4-epoxy-1-pentene, 4,5-epoxy-2-pentene, 1,2-epoxy-5,9-cyclododecadiene, 3,4-epoxy-1-vinyl cyclohexene, 1,2-epoxy-5-cyclooctene, glycidyl acrylate, glycidyl methacrylate, glycidyl sorbate, glycidyl cinnamate, glycidyl crotonate and glycidyl-4-hexenoate.

5. The crosslinked material according to claim 3, wherein the monomer having the reactive silicon group which constitutes the repeating unit (C) is selected from the group consisting of 3-glycidoxy propyl trimethoxy silane, 3-glycidoxy propyl methyl dimethoxy silane, 4-(1,2-epoxy) butyl trimethoxy silane and 2-(3,4-epoxy cyclohexyl) ethyl trimethoxy silane.

6. The crosslinked material according to claim 3, wherein the monomer having two epoxy groups which constitutes the repeating unit (C) is 2,3-epoxypropyl-2',3'-epoxy-2'-methylpropyl ether or ethyleneglycol-2,3-epoxypropyl-2',3'-epoxy-2'-methylpropyl ether.

7. The crosslinked material according to claim 3, wherein the monomer having the halogen atom which constitutes the repeating unit (C) is selected from the group consisting of epichlorohydrin, epibromohydrin and epiiodohydrin.

8. The crosslinked material according to claim 2, wherein the polyether copolymer comprises: 5 to 25 % by mol of the repeating unit (A); 94 to 74 % by mol of the repeating unit (B); and 0.01 to 10 % by mol of the repeating unit (C).

9. A solid polymer electrolyte comprising: (I) a crosslinked material of the polyether copolymer according to claim 2; (II) an electrolyte salt compound; and (III) a plasticizer which may be added if necessary and is selected from the group consisting of an aprotic organic solvent, a derivative or a metal salt of a linear or branched

polyalkylene glycol, and a metal salt of said derivative.

10. The solid polymer electrolyte according to claim 9, wherein the electrolyte salt compound (II) is a compound composed of a cation selected from metal cation,
 5 ammonium ion, amidinium ion and guanidium ion, and an anion selected from chloride ion, bromide ion, iodide ion, perchlorate ion, thiocyanate ion, tetrafluoroborate ion, nitrate ion, AsF_6^- , PF_6^- , stearylsulfonate ion, octylsulfonate ion, dodecylbenzenesulfonate ion, naphthalenesulfonate ion, dodecyl naphthalenesulfonate ion, 7,7,8,8-tetracyano-p-quinodimethane ion, X^1SO_3^- , $[(\text{X}^1\text{SO}_2)(\text{X}^2\text{SO}_2)\text{N}]^-$,
 10 $[(\text{X}^1\text{SO}_2)(\text{X}^2\text{SO}_2)(\text{X}^3\text{SO}_2)\text{C}]^-$ and $[(\text{X}^1\text{SO}_2)(\text{X}^2\text{SO}_2)\text{YC}]^-$ (wherein X^1 , X^2 , X^3 and Y respectively represent an electron attractive group).

11. The solid polymer electrolyte according to claim 10, wherein X^1 , X^2 and X^3 independently represent a perfluoroalkyl group having 1 to 6 carbon atoms or a
 15 perfluoroaryl group having 6 to 20 carbon atoms, and Y represents a nitro group, a nitroso group, a carbonyl group, a carboxyl group or a cyano group.

12. The solid polymer electrolyte according to claim 10, wherein the metal cation is a cation of a metal selected from Li, Na, K, Rb, Cs, Mg, Ca, Ba, Mn, Fe, Co, Ni, Cu,
 20 Zn and Ag.

13. The solid polymer electrolyte according to claim 9, wherein the aprotic organic solvent is an aprotic organic solvent selected from ethers or esters.

14. The solid polymer electrolyte according to claim 9, wherein the polyalkylene glycol is polyethylene glycol or polypropylene glycol.

15. The solid polymer electrolyte according to claim 9, wherein the derivative of the polyalkylene glycol is an ether derivative or an ester derivative.

16. The solid polymer electrolyte according to claim 9, wherein the metal salt of the polyalkylene glycol is selected from the group consisting of a sodium salt of the polyalkylene glycol, a lithium salt of the polyalkylene glycol, and a dialkyl aluminum salt of the polyalkylene glycol.

17. A battery comprising:
a solid polymer electrolyte according to claim 9;
a positive electrode; and
a negative electrode.

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add
a17

add
b1

add
c1